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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,583	01/27/2004	Kazuhiro Koto	2635-199	9133
23117 7590 04/01/2008 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
DO, CHAT C				
ART UNIT		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/764,583

**Applicant(s)**

KOTO ET AL.

**Examiner**

CHAT C. DO

**Art Unit**

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE-US)  
Paper No(s)/Mail Date 11/13/2007.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This communication is responsive to Amendment filed 12/28/2007.
2. Claims 1-18 are pending in this application. Claims 1, 13 and 17 are independent claims. In Amendment, claims 17-18 are added. This Office Action is made final.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 18, the limitation "said interpolated value" lacks of an antecedence basis since the interpolated value is not addressed previously. For examination purposes, the examiner considers the limitation as "an interpolation value".

***Claim Rejections - 35 USC § 101***

5. 35 U.S.C. 101 reads as follows:  
  
Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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6. Claims 1-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-16 cite an apparatus for converting data in accordance with a predetermined mathematical algorithm. However, claims 1-12 are directed to software per se since all the means are the software modules for performing the intended function. Claims 13-16 are directed to non-functional data structure for storing data. Therefore, claims 1-16 are directed to non-statutory subject matter.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4, 8, 11, 13-14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinds et al. (U.S. Patent Publication Application No. 2004/0128331) in view of the admitted prior art.

Re claim 1, Hinds et al. disclose in Figures 1-9 an electronic control apparatus which incorporates a floating-point arithmetic function and performs calculation and control operations in accordance with a predetermined computer program (e.g. abstract and general architecture is seen in Figure 5), said apparatus comprising: conversion means adapted to operate on data (e.g. input fixed-point values in Figure 5), and to convert at least one of said data from fixed-point representation to floating-point

representation data (e.g. Figure 5 represents the fixed-point to floating-point conversion flow), wherein: said conversion means (e.g. Figures 5 and 8) comprises means for providing a LSB (least significant bit) conversion value as a floating-point representation value which directly represents a specific value of said quantity (e.g. tables 4 and 5 in pages 9-10 wherein the LSB is the DecLoc value), with said specific physical quantity value having been predetermined as corresponding to a LSB (least significant bit) of said data (e.g. paragraphs [01040109]); and said conversion means (e.g. Figures 5 and 8) is adapted to operate on said floating-point representation converted data with said LSB conversion value (e.g. Tables 4 and 5), to obtain a floating-point representation calculated value of said quantity and to output said calculated value (e.g. output of Figures 5 and 8 as floating-point data presentation of the input fixed-point data presentation of data quantity).

Hinds et al. fail to disclose in Figures 1-9 the data is map data that comprise a set of map points and a set of map values respectively corresponding to said map points and said at least one of said set of map points and set of map values indirectly represent respective values of a physical quantity. However, the admitted prior art discloses in the background of invention pages 1-3 the data is map data that comprise a set of map points and a set of map values respectively corresponding to said map points and said at least one of said set of map points and set of map values indirectly represent respective values of a physical quantity (e.g. page 2 lines 8-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the data is map data that comprise a set of map

points and a set of map values respectively corresponding to said map points and said at least one of said set of map points and set of map values indirectly represent respective values of a physical quantity as seen in the admitted prior art into Hinds et al.'s invention because it would enable to increase precision with less storage by formatting data (e.g. general and logically seen in pages 1-2).

Re claim 2, Hinds et al. further discloses in Figures 1-9 map points are expressed in floating-point representation in map data and map values are expressed in fixed-point representation in map data (e.g. different types of data in Figures 3), and wherein data expressing set of map values are of smaller amount than data which express set of map points (e.g. the bits representing data in the fixed-point data is less than the bits representing the data in floating point as seen in Figures 3).

Re claim 3, Hinds et al. further discloses in Figures 1-9 map points are expressed in fixed-point representation in map data and map values are expressed in floating-point representation in map data (e.g. different types of data in Figures 3), and wherein data expressing set of map values are of greater amount than data which express set of map points (e.g. the bits representing data in the fixed-point data is less than the bits representing the data in floating point as seen in Figures 3).

Re claim 4, Hinds et al. further discloses in Figures 1-9 map data and map values are both expressed in fixed-point representation in map data (e.g. both in fixed-point format as seen in Figures 3), and wherein conversion means performs conversion of both map points and map values from fixed-point representation to floating-point representation (e.g. Figures 5 and 8).

Re claim 8, Hinds et al. further discloses in Figures 1-9 LSB conversion value corresponds to a LSB (least significant bit) of said set of map points (e.g. DecLoc in pages 9-10) and wherein said conversion means (e.g. general architectures are seen in Figures 5 and 8) is adapted to convert said map points to floating-point representation map point data and to operate on said floating- point representation map point data with said LSB conversion value to obtain said calculated physical quantity value expressed in floating-point representation (e.g. output of Figures 5 and 8).

Re claim 11, Hinds et al. in view of the admitted prior art fail to disclose the conversion means executes conversion by using a program that is written in assembler language. However, the examiner takes an Office notice that a program is written in assembler language is well known in the art of technology and widely used in circuit. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the conversion means executes conversion by using a program that is written in assembler language into Hinds et al. in view of the admitted prior art's invention because it would enable to reduce the complexity and increase performance of instruction.

Re claim 13, Hinds et al. discloses in Figures 1-9 a if memory apparatus for an electronic control apparatus, said electronic control apparatus executing calculation and control processing in accordance with a predetermined program and having a floating-point arithmetic function, and said memory apparatus having stored therein map data which are used in floating-point calculations (e.g. abstract and Figures 5 and 8), said memory apparatus comprising: a digital store containing said data, with at least one of

said set of data being expressed by fixed-point representation data (e.g. as input into the conversion in Figures 5 and 8), and means for outputting a calculated value representing a quantity (e.g. output of Figures 5 and 8), wherein said memory apparatus has stored therein, in conjunction with said data, a LSB (least significant bit) conversion value (e.g. DecLoc in pages 9-10) that is expressed in floating-point representation and represents a physical quantity value that has been predetermined as corresponding to a least significant bit of said fixed-point representation data (e.g. paragraphs [0104-0109]).

Hinds et al. fail to disclose in Figures 1-9 the data is map data that comprise a set of map points and a set of map values respectively corresponding to said map points and said at least one of said set of map points and set of map values indirectly represent respective values of a physical quantity. However, the admitted prior art discloses in the background of invention pages 1-3 the data is map data that comprise a set of map points and a set of map values respectively corresponding to said map points and said at least one of said set of map points and set of map values indirectly represent respective values of a physical quantity (e.g. page 2 lines 8-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the data is map data that comprise a set of map points and a set of map values respectively corresponding to said map points and said at least one of said set of map points and set of map values indirectly represent respective values of a physical quantity as seen in the admitted prior art into Hinds et al.'s invention because it would enable to increase precision with less storage by formatting data (e.g. general and logically seen in pages 1-2).



Re claim 14, Hinds et al. further discloses in Figures 1-9 memory apparatus has stored therein, in conjunction with said map data, an offset value that is a difference between a physical quantity value and a value that has been generated by converting said fixed-point representation data to floating-point representation data and using said LSB conversion value to operate on a result of a calculation performed on said converted floating-point representation data (e.g. paragraphs [0104-0109]).

Re claim 17, it has similar limitations cited in claim 1. Thus, claim 17 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

9. Claims 10, 12, and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinds et al. (U.S. Patent Publication Application No. 2004/0128331) in view of the admitted prior art, as applied to claim 1 above, and further in view of Ford (U.S. Patent Publication Application No. 2003/0065698).

Re claim 10, Hinds et al. in view of the admitted prior art fail to disclose a means for providing ID data which express a type of fixed-point representation data, wherein conversion means performs conversion of floating-point representation data to fixed-point representation data based on ID data. However, Ford discloses in Figure 5 a means for providing ID data which express a type of fixed-point representation data, wherein conversion means performs conversion of floating-point representation data to fixed-point representation data based on ID data (e.g. paragraph [0044] and component 515 in Figure 5).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add a means for providing ID data which express a type of fixed-point representation data, wherein conversion means performs conversion of floating-point representation data to fixed-point representation data based on ID data as seen in Ford's invention into Hinds et al. in view of the admitted prior art's invention because it would enable to identify the type of operand (e.g. paragraph [0044]).

Re claim 12, Hinds et al. in view of the admitted prior art fail to disclose a means for providing ID (identifier) data which have been predetermined as corresponding to map data and which indicate whether or not both map points and map values of map data are expressed in floating-point representation, and means for inhibiting conversion operation of conversion means when ID data indicate that both map points and map values are expressed in floating-point representation. However, Ford discloses in Figure 5 a means for providing ID (identifier) data which have been predetermined as corresponding to map data and which indicate whether or not both map points and map values of map data are expressed in floating-point representation (e.g. components 515 and 520 in Figure 5 and paragraph [0044]), and means for inhibiting conversion operation of conversion means when ID data indicate that both map points and map values are expressed in floating-point representation (e.g. component 525 in Figure 5).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add a means for providing ID (identifier) data which have been predetermined as corresponding to map data and which indicate whether or not both map points and map values of map data are expressed in floating-point

representation, and means for inhibiting conversion operation of conversion means when ID data indicate that both map points and map values are expressed in floating-point representation as seen in Ford's invention into Hinds et al. in view of the admitted prior art's invention because it would enable to optimize the operation/performance by eliminating un-necessary operation (c.g. paragraph [0044]).

Re claim 15, it has similar limitations cited in claim 10. Thus, claim 15 is also rejected under the same rationale as cited in the rejection of rejected claim 10.

Re claim 16, it has similar limitations cited in claim 12. Thus, claim 16 is also rejected under the same rationale as cited in the rejection of rejected claim 12.

### ***Response to Arguments***

10. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis Bullock can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Chat C. Do/  
Primary Examiner, Art Unit 2193

March 28, 2008

**Application Number****Application/Control No.**

10/764,583

**Applicant(s)/Patent under  
Reexamination**

KOTO ET AL.

**Examiner**

CHAT C. DO

**Art Unit**

2193